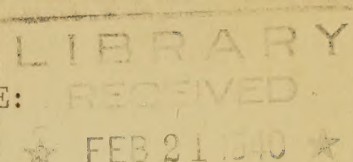


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U.S. Rural Electr. Admin.

HOW REA SYSTEMS ARE DEVELOPING USE:



FINANCIAL PROGRESS AND OUTLOOK

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(This summary of progress and outlook is reproduced from the Annual Report for 1939 recently transmitted to the Congress by the Administrator of Rural Electrification, Harry Slattery.)

To the initial extension of rural electric service, and to keeping at a minimum the interest and amortization charges which are a relatively large portion of the total operating costs, sharp reductions in over-all construction costs, such as REA has already achieved in its 4 years of operation, are vital. No less important to the continuing and increasing success of self-liquidating rural power systems is the abundant, and, to the user, profitable use of electric energy. An analysis of the growth of use and several related facts in the history of the electric supply industry, together with figures on the extent of use on REA-financed systems now in service, encourages the belief that, with possible exceptions here and there, rural electric systems in the areas in which their development has been or is about to be undertaken will pay their own way.

Use of Electricity Doubles in 12 Years.

The growth of the use of electricity is one of the most impressive items in the social and economic history of twentieth century America. In 1926 the average domestic use, according to figures published by the Edison Electric Institute, was 427 kilowatt-hours a year. Five years later it had risen to 584 kilowatt-hours; in 1938, it was 853 kilowatt-hours.

In the light of these figures, it is less surprising that the electric supply industry proved to be the country's only substantially depression-proof major industry. Its revenues at the worst stage of the recent depression, in 1933, were only 11 percent below peak levels. While the national income shrank 40 percent between 1929 and 1932; manufacturing income, 63 percent; trade income, 32 percent—electric light and power, together with the closely related gas industry escaped with a shrinkage of 6 percent. The Department of Commerce found that it was the increasing use of electricity that "largely offset the effect of the depression" so far as the power industry was concerned.

Farmers Use More Than City Consumers.

So much for the industry as a whole. But returns from the quinquennial census of the electric light and power industry, recently released by the Bureau of the Census, are of even greater significance. By specifically comparing figures on average consumption for farm and nonfarm consumers, the census clearly indicates more and more widespread use of electricity on the farm.

In 1937 farm consumers used for domestic purposes nearly 40 percent more energy per consumer than did nonfarm residents. The average annual bill for farm service was one-fifth greater than for nonfarm, but the farmer's more extensive use of electricity resulted in his paying an average rate 14 percent lower than the nonfarm consumer. These averages, moreover, exclude service separately reported for farm consumers under the classification of "commercial and industrial." While nonfarm consumers used an average of 779 kilowatt-hours for domestic purposes, at an average rate of 4.3 cents per kilowatt-hour and an annual average bill of \$34, farm consumers used 1,084 kilowatt-hours for domestic purposes, for which their average rate was 3.7 cents per kilowatt-hour and their annual bill \$40.

For power purposes, farm consumers purchased more than three times as much energy as for domestic use. Much of this power consumption, of course, was in the Pacific States, where energy requirements for irrigation are high.

Expanding Farm Service and Use.

The opportunities for great expansion of farm electric service, however, are indicated by the fact that in 1937, even though the average domestic consumption on farms exceeded that of nonfarm consumers, sales to farmers equalled only 4 percent of sales to people living in towns. Pointing both the need for further development of electrical use in farm operations, and the way in which the need may be met, a large group of REA-system superintendents wrote, after a conference at Yellowstone National Park in July 1939:

"We desire to impress your Administration with the fact that what the farmers need is new and useful appliances that will produce revenue which will supply them with the means to buy the large quantities of electrical energy that are needed in order to make this program a success."

Saving Time: Earning Money.

Operating data give weight to the belief that farmers on REA-financed systems are learning quickly how they can save time and earn money by using more electricity. In January 1939 the average residential consumption on 132 systems which had been in operation for 12 months or more was 53.5 kilowatt-hours. By July the number of such systems had grown to 240; but even with the dilution resulting from the addition of many new members, on the older systems as well as on the 108 newcomers, the average residential consumption during this month, when use is normally low, dropped less than 7 kilowatt-hours to 46.9. In September 1939 the average for 245 projects operating 12 months or more had climbed to 50.2 kilowatt-hours. It should be remembered that most of the farmers served had begun to use electricity for the first time when their REA-financed lines were energized.

The Increase in Use of Electricity.

As was pointed out in the annual report of the Rural Electrification Administrator to the Congress for 1938, experience indicates that, disregarding the dilution resulting from the addition of new members, average use increases about 20 percent in the first year.

A recent study of 21 systems which had relatively small increases in the number of member-users during the 12-month period between September 1938 and September 1939 reveals a like percentage of increase in average monthly consumption, from 69 to 82 kilowatt-hours. These findings are consistent with indications from previous studies that the kilowatt-hour consumption from year to year increases on the average about 10 or 12 kilowatt-hours per month on systems which have not experienced temporary dilution through new members who at the outset use little energy.

Of the systems for which average consumption figures were cited in the 1938 report (pp. 61-62), the majority reported increases in September 1939. Among the more significant ones, the Caroline County (Virginia) system showed an increase in average farm consumption to 99 kilowatt-hours in September 1939. This figure represents steady progress, from 34 kilowatt-hours in 1936 to 61 in 1937 and 81 in 1938. With an increase in the number of members connected per mile from 3.3 to 3.9, the Sussex County (New Jersey) system nevertheless reported an average farm consumption of 122 kilowatt-hours as against 105 in 1938.

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The Boone Valley Electric Cooperative, of Wright County, Iowa, had sufficient increase in average consumption to raise the total monthly revenue per mile nearly a dollar.

In our 1938 report we contrasted with the systems that were making a promising showing the Upshur County (Texas) system, which in July 1938 had an average consumption per member of only 24 kilowatt-hours, and noted that "with good management it is anticipated that this consumption can be built up to a more promising figure." For July 1939 it was 42 kilowatt-hours, for August 46 kilowatt-hours, and for September 49 kilowatt-hours--more than double the average 14 months earlier.

On REA systems in the TVA area, where both wholesale and retail rates are unusually low, electricity is abundantly used. Typical is the Gibson Electric Membership Corporation of Trenton, Tenn. During August 1939 its 4,651 members used an average of more than 122 kilowatt-hours. Twenty-eight REA-financed rural electric systems in the TVA area are distributing more electricity per consumer than is distributed in any other section of the country.

Where lines have been energized for reasonably long periods, and where the cost of electricity is sufficiently low to promote rapidly increasing use of power, average consumption often shows a startling--and healthy--rise.

Up 20 Percent.

Without the advantage of TVA's cheap electricity, many systems are acquiring a considerable number of rather large users. The Missoula (Montana) Electric Cooperative, for example, reported a vigorous increase in average consumption exceeding 20 percent between September 1938 and September 1939. At the earlier date, consumption averaged 74.5 kilowatt-hours per member, while a year later it had reached 94.8 kilowatt-hours. The cooperative reported that during September 1939, 30 members used more than 100 kilowatt-hours each.

The consumption of the 5 members of the Fergus Electric Cooperative of Lewistown, Mont., using the highest amount of energy for farm and home purposes ranged from 124 to 208 kilowatt-hours in the same month. In the prairie States reports of liberal use are common. During October 1939, 144 users on the lines of the Roosevelt Rural Public Power District, in Nebraska, used more than \$5 worth of electricity each. The Polk County Rural Public Power District, of Stromsburg, Nebr., reported 13 consumers who during May 1939 used more than 100 kilowatt-hours and 13 others were close to the 100 kilowatt-hour mark. On the Wright County (Iowa) Rural Electric Cooperative system, 13 members used between 200 and 510 kilowatt-hours in September 1939.

In the Old Northwest, 36 members of a Wisconsin cooperative used more than 100 kilowatt-hours each during June, and the Stearns County (Minnesota) system had 111 members using more than 100 kilowatt-hours, 79 of them exceeding 200 kilowatt-hours, during September. In Indiana, one cooperative reported that 60 members used more than 100 kilowatt-hours per month early in 1939, while in Ohio each of several REA-financed systems reported between 30 and 40 members in the over-100 kilowatt-hour per month group. To the south, a Kentucky cooperative in September 1939 had 46 members whose use exceeded 100 kilowatt-hours, and a Louisiana system furnished more than 400 kilowatt-hours to each of 5 cooperative members for domestic uses during August. The Alfalfa Electric Cooperative, in Oklahoma, reported that in August, 87 of its members consumed more than 100 kilowatt-hours.

How They Put Electricity to Work.

Naturally, the use is very much smaller, at least at this still very early stage, on some of the other systems. That the larger consumption figures will become more and more common, however, is suggested by the results of a comprehensive survey of appliances in use on REA-financed systems. Replies to questionnaires sent out in July 1939 were received from more than 50,000 members or other users on 123 systems in 36 States. Those replying had been served for an average of only 10½ months. Yet scarcely more than 1 percent reported "No appliances."

Nearly 6 users in every 10 had installed washing machines, and 1 member in every 3 an electric refrigerator. Nearly 1 in 5 had added a hot plate, a water pump, and a small motor.

The leading appliances were in every instance more generally used than in January and July 1938, when earlier surveys were made on groups of REA-financed systems.

The uses to which electricity is being put, the survey revealed, are extremely practical and in part income-producing. This is illustrated by the list of 10 appliances shown to be in most general use, with the percentage of users owning each. The list follows:

Hand iron, 84.2 percent; radio, 82.4 percent; washing machine, 58.9 percent; refrigerator, 32.3 percent; toaster, 31 percent; vacuum cleaner, 21.3 percent; hot plate, 19.2 percent; water pump, 18.5 percent; motor up to one horsepower, 18.2 percent; and cream separator, 14 percent.

Most Systems Recently Energized.

The use of electricity will of course govern in large measure the financial results shown by the systems. In appraising the situation today the age of the systems is the most significant factor. Although a handful of small systems have been in operation since early in 1936, most are still quite new. Indeed, because so great a proportion of the lines were put into operation only in the last fiscal year, when the program of construction and energization reached its peak, a large proportion of the lines have been in operation only about one year and the average user on the REA-financed systems as a whole has been receiving service for only a year.¹ Manifestly this is too short a time for final judgment of financial performance.

It is plain that had new systems not been created, and had the systems not constantly added new users, as of course was necessary to their financial success as well as to their social usefulness, the average use of energy would be very much larger, and the revenues per user accordingly greater. Nevertheless, as the account of electrical use would indicate, the experience to date has been very encouraging.

Changing Opinion.

From time to time a few of the die-hard utility executives reiterate assertions that cooperative or other self-service rural electrification cannot be made to pay; that the new systems are failing. Those assertions appear to be entitled to no more weight than like statements that came from the same

¹-In December 1938, the systems were serving approximately 176,000 farm families and other users. By June 1939, this number had increased to approximately 268,000, and the estimate for December 1939 is 400,000.

quarters in 1935. At that time rural electrification was dead on its feet, bogged in sheer lethargy. Some of the utility people nevertheless declared that electric service was going to the farms just as rapidly as was economically feasible; that it was futile to attempt to speed it up. The thoroughgoing refutation of these statements came from the utilities themselves in the next 4 years. As the Federal Government showed the way, they found rural electrification so far sound and profitable that they increased the number of farms they served by half a million.

Favorable and Less Favorable Areas.

As for the REA systems constructed in the same period, a considerable number of them are in economically favorable areas where incomes are relatively high. These areas had been left unserved, in many cases, less because the utilities were reluctant to build than because panic and depression left them without capital to finance extensions even though the impairment of their revenues was relatively slight. No further proof is required of the bright prospects of the REA systems serving these areas than the repeated unsuccessful attempts the utilities have since made to buy them out.

Many other areas are recognized as "thin," in number of users and in income. Here pay-out unquestionably will be difficult, but it does not appear unattainable. In general, pay-out prospects in these less favorable areas are being improved by the addition of new consumers and increased usage on the one hand, and by steadily reduced costs as well as more efficient operation on the other hand.

Inevitably the soundness of the loans in the "thinner" areas will depend in part upon the economic condition of the American farmer during the next 25 years. On the assumption that American agriculture will maintain itself at a level of decent living, the ultimate losses on REA loans should be small.

In this appraisal of prospects, a very important element is the fact that electricity has ceased to be a rural luxury and is becoming as much of a necessity to the farmer as the automobile. The use of electric energy in considerable quantities on the farm is in its infancy, and in terms of saturation is about where the automobile was 20 years ago. It has been the history of the electric light and power industry as of most other industries, that every new field required several years' development. But it has also been the history of the power industry since its early developmental period, that its business condition has been profitable and stable, and its revenues have been little affected by economic depressions.

The farmer is potentially and already in a goodly number of cases actually a large user of electricity for power. Electricity seems certain to produce economies of farm operation that will largely if not wholly finance the energy bill and in some instances yield a profit. It will require some years, of course, for a general acceptance of electric-power machinery and electric appliances, or for their substitution for existing apparatus. REA has taken this into account by basing its loans upon an estimate of conditions over a 25-year period and not upon the revenue possibilities of the first few years.

Utilities Now Seek Profit in "Thinner" Areas.

This adaptation of the pay-out terms to the difficulty of the pay-out problem is one token of the promise of self-liquidation. Another, though lesser, token is the fact that a number of the power companies, like the REA systems, are now extending their lines into relatively thin areas. Insofar as they do

thus extend their lines they are offering service on much the same terms—with the exception, usually, of area coverage—as are offered by the REA systems. The Minnesota Power & Light Co., for example, announced recently:

"In looking over the present development your electric company has agreed to extend rural lines to areas where 3 farms per mile can be connected adjacent to its distribution lines. It agrees to do this for a minimum monthly guarantee of \$3.50 per customer, for which 35 kilowatt-hours are given, with a reduced rate for additional amounts of current. The \$3.50 minimum barely enables us to 'get by' but eventually we expect the farmer to use electricity for practically all farm operations on his farm, which will improve the income."²

Similarly, the Washington Water Power Co., in announcing in September 1939 a plan for a \$1,000,000 rural extension program, made known its readiness to "build up to 2,400 feet of line for a farm customer who agrees to pay a monthly minimum of \$3 for electric service for the first 5 years, after which the regular minimum will apply."³

Rural extension policies which provide for service at moderate cost where there is an average of 3 customers to the mile have become fairly common among the more progressive utilities.

Special Business Advantages of Cooperative Enterprise.

Experience has shown that self-service cooperatives are able to succeed in many rural areas where utility companies are unable to serve at a profit. The fact that the consumers, through their cooperative association, are in effect the owners of the system and responsible for its success has important psychological aspects that are definitely reflected in business results. There has been a large amount of volunteer work by officers and members both during the initial period of construction and the later period of operation. Cost of construction and operation is thereby reduced and this owner-consumer interest contributes to a larger use of electricity.

The annual meeting of the members of an electric cooperative has become a unique and significant event in many rural communities. At the last annual meeting of the Pioneer Electric Cooperative in Western Ohio 3,000 persons crowded the armory at Piqua for an all-day session. There have been many instances when more than a thousand persons attended such meetings. It would be a rare occasion, if indeed such an instance has ever occurred, when a utility company could gather together a thousand of its consumers for a discussion of matters incident to the success of the business.

Recent membership effort on the part of REA-financed cooperatives further illustrates the special business advantages of cooperative undertakings. Thousands of officers and members have been engaged without compensation in intensive activity to secure new members among the persons located along the lines but who have not yet connected for service, and generally to enlarge the usefulness of the systems. It would be almost unheard of for any business organization for profit to enlist large numbers of its customers in a volunteer effort to market its products.

Development Period Necessary.

In the REA financing, as has been indicated, the effort has been to

2-CONTACT, a company publication, September 1939.

3-ELECTRICAL WORLD, September 9, 1939, p. 60.

make allowance for "thinness" and for the difficulty of pay-out in the terms of the loans. As was pointed out in our annual report to the Congress for 1938 (p.62), on the more recent loans, the 25-year period of repayment authorized by the statute was substituted for the 20-year period which was used earlier, and interest payments were scheduled to start after two and a half years, with no payments on principal until the end of the fourth year.

It has been recognized that time must be allowed for the development of the distribution systems of cooperative and other borrowers. The Congress in the wording of the Act recognized that such a development period might require 5 years. However, the early administration of REA set terms for the beginning of payment of interest and repayment of principal on a much more rigorous--experience demonstrates too rigorous--basis. This was done with the intent of extension in particular instances according to particular circumstances, such as delays in construction and energization, and therefore the earning of income, beyond the control of a borrower. In effecting the readjustment of the terms of payment just noted, REA sought to accommodate them to the gradual development of the electric service enterprise. Experience has shown that we must allow for the unavoidable delays, for injury to the systems in some areas by utility "spite lines," as was pointed out in the last annual report, and for tardiness in connecting the full quotas of users. Some of the users, once service is assured, take their time about connecting up. Both REA and the systems are attacking this problem, and remedial measures have been started.

As to the older loans, on the 20-year basis, delays occurring during organization or construction have, in certain cases, required a revision of the earlier schedules of loan repayments. All revisions that have been made have been kept within the terms of the 25-year schedule that has been cited.

On many other loans the 20-year terms have been retained, even though they appear generally less appropriate, because there has been no need to change them.

Eleven Borrowers Pay in Advance.

Indeed some of the earlier established systems have shown up so well in point of revenues, that 11 of the cooperatives and other borrowers have made--or, in one instance, is about to make--substantial payments of interest and principal in advance. The Green River Rural Electric Cooperative Corporation of Owensboro, Ky., recently paid \$6,000 to wipe out interest accumulated but not yet due and made an advance payment on principal of \$10,000.

Similarly, the Inter-County Rural Electric Cooperative Corporation of Danville, Ky., has requested authority for payment of \$6,000 for interest charges not yet due, and of \$4,000 in advance on principal.

Eight other borrowers made interest and principal payments in advance, repaying obligations which will fall due on various dates in 1940 and 1941. These systems are: Illini Electric Cooperative of Champaign, Ill.; the Jackson County Rural Electric Membership Corporation of Brownstown, Ind.; the Amana Society Service Co. of Amana, Iowa; the Maquoketa Valley Rural Electric Cooperative of Anamosa, Iowa; the Benton County Electric Cooperative Association of Vinton, Iowa; the Salt River Rural Electric Cooperative Corporation of Bardstown, Ky.; the Pitt & Greene Electric Membership Corporation of Farmville, N. C.; and the Duck River Electric Membership Corporation of Shelbyville, Tenn.

Another such borrower is the Anoka County Cooperative Light & Power Association of Anoka, Minn., whose system did not go into operation until

March 1938. In May 1939, little more than a year after it began serving its farmer members, it found itself with a substantial amount of cash in the bank from the excess of revenues over operating costs. The only payment falling due on its loan was one of about \$1,000 for interest on June 1. On its own motion the cooperative paid to REA all interest which had accrued but would not become due for some time, amounting to approximately \$6,000.

A few weeks later a tornado hit the cooperative's system at the one spot where it could do the most damage; it utterly demolished the substation. The cooperative still had sufficient resources to restore service and complete repairs.

The total of the advance payments made or about to be made by the 11 borrowers mentioned is \$79,594.70.

No Charge-offs or Losses.

Under the Rural Electrification Act, the Rural Electrification Administration advances 100 percent of the funds necessary not only for the building of the line but for other overhead incident to the construction loan, such as engineering fees, legal fees, etc. Not a dollar of the loans, totaling over \$176,000,000 advanced up to December 1, 1939, has been charged off by REA or transferred to an inactive account, although in financial experience generally such charge-offs are quite common. No losses have been experienced on any loans, and there have been no foreclosures.

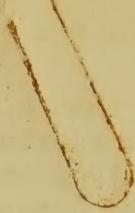
Defaulted Payments.

Twenty-seven installments of interest and principal on outstanding loans remained unpaid on June 30, 1939, and were thereby defaulted. The borrowers, however, are being granted extensions of time to pay interest and principal in accordance with section 12 of the Rural Electrification Act which authorizes the Administrator to extend the time of payment of principal or interest of loans for power systems for a period not in excess of 5 years. The payments allowed to become past due were in situations where the old 20-year payment plan was in effect with its accelerated scale of payment. None of these situations is a result of impaired assets or operating conditions which cannot be remedied. In many instances the difficulty lay in the fact that circumstances beyond the control of the borrower, such as injunctions by private interests, had delayed construction or energization and the inflow of operating revenue. Some of the systems affected have since shown an accelerated growth. The total of such defaulted payments was \$65,616.30.

On REA's wiring and plumbing installation loan contracts, under which \$2,114,315 had been advanced up to December 1, 1939, collections showed less than 1 percent delinquencies. No extensions of time have been granted on any of these loans. Furthermore, full interest and principal payments begin 6 months after the date of the note.

Collections Approximately \$3,300,000.

To summarize our loans made and the collections from the borrowers, out of approximately \$267,000,000 allotted by REA through November 1939, there had been paid out, or advanced to our borrowers, a total of about \$176,000,000. The amount advanced is less than the amount allotted because construction and other work of the systems is not paid for until the work had been done. Of the \$176,000,000 total paid out, \$104,000,000 came from the Reconstruction Finance Corporation and \$72,000,000 from appropriated funds.



THE FIRST PART OF THE REPORT IS A SUMMARY OF THE WORK DONE DURING THE YEAR. IT IS A CONCISE STATEMENT OF THE FACTS AND FIGURES, AND IS INTENDED TO GIVE A GENERAL IDEA OF THE PROGRESS MADE. THE SECOND PART IS A DETAILED ACCOUNT OF THE WORK DONE, AND IS INTENDED TO GIVE A FULLER AND MORE COMPLETE VIEW OF THE MATTER.

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With reference to the collections from borrowers, in view of the necessary development period that has been discussed, naturally few of the systems have amortization payments due as yet, and for many of them the interest payments are not yet due. Our collections to November 30, 1939, amount to approximately \$3,300,000.

The larger part of this total represents collections of borrowers' loans pledged as collateral to REA notes with the Reconstruction Finance Corporation. Such collections total approximately \$2,700,000, of which \$476,000 represents payments of principal by the borrowers and \$2,224,000 represents interest payments. Collections on unpledged loans total \$596,000, of which \$296,000 has been covered into the Treasury as interest and \$300,000 as repayment of principal.

All payments required under the terms of the REA notes held by the Reconstruction Finance Corporation, totaling \$773,735.21, have been made. Additional interest payments amounting to approximately \$1,600,000, will be due RFC on January 1, 1940, and will be met with an ample margin.

